PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Assistant Commissioner for Patents
United States Patent and Trademark Office
Box PCT
Washington, D.C.20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 25 February 2000 (25.02.00)	
International application No. PCT/GB99/02129	**Applicant's or agent's file reference** P/61210/GPTU51
International filing date (day/month/year) 02 July 1999 (02.07.99)	**Priority date** (day/month/year) 03 July 1998 (03.07.98)
Applicant PEARSON, Dennis et al	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

25 January 2000 (25.01.00)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Olivia RANAIVOJAONA

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION**	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
P/61210/GPTU51		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/GB 99/ 02129	02/07/1999	03/07/1998
Applicant		
MARCONI COMMUNICATIONS LIMITED et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   [ ] the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

   b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

   [ ] contained in the international application in written form.

   [ ] filed together with the international application in computer readable form.

   [ ] furnished subsequently to this Authority in written form.

   [ ] furnished subsequently to this Authority in computer readble form.

   [ ] the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   [ ] the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. [ ] **Certain claims were found unsearchable** (See Box I).

3. [ ] **Unity of invention is lacking** (see Box II).

4. With regard to the **title,**

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 3

   [X] as suggested by the applicant.

   [ ] None of the figures.

   [ ] because the applicant failed to suggest a figure.

   [ ] because this figure better characterizes the invention.

INTERNATIONAL SEARCH REPORT

International Application No
[redacted]/GB 99/02129

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04Q3/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 36430 A (NORTHERN TELECOM LIMITED) 2 October 1997 (1997-10-02) abstract page 1, line 5 - line 9 page 2, line 10 - line 18 page 4, line 9 - line 22 page 6, line 14 - line 37 page 9, line 23 -page 10, line 6 --- -/--	1-3,6,13

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
7 October 1999	14/10/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Larcinese, C

1

Form PCT/ISA/210 (second sheet) (July 1992)

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	RICHARDS P S: "RAPID SERVICE DELIVERY AND CUSTOMIZATION IN A DEVELOPING NETWORK INFRASTRUCTURE" COMPUTER NETWORKS AND ISDN SYSTEMS, May 1993 (1993-05), pages 1031-1039, XP000786027 ISSN: 0169-7552 page 1031, right-hand column, line 16 - line 24 page 1033, right-hand column, line 6 -page 1034, right-hand column, line 30 figure 1 ---	1-13
A	US 5 511 113 A (TASAKI ET AL.) 23 April 1996 (1996-04-23) abstract column 1, line 1 - line 19 column 2, line 61 -column 3, line 3 column 3, line 38 - line 54 ---	1-13
A	EP 0 726 682 A (AT&T CORP.) 14 August 1996 (1996-08-14) abstract column 3, line 38 -column 4, line 16 figure 1 -----	1-13

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/GB 99/02129

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9736430 A	02-10-1997	CA 2245156 A	02-10-1997
		EP 0888695 A	07-01-1999
US 5511113 A	23-04-1996	JP 7007570 A	10-01-1995
EP 726682 A	14-08-1996	US 5664102 A	02-09-1997
		CA 2167235 A	08-08-1996
		CN 1134635 A	30-10-1996
		JP 8274874 A	18-10-1996

The Patent Office

INVESTOR IN PEOPLE

Application No: GB 9814418.1 **Examiner:** Ken Long
Claims searched: 1 to 14 **Date of search:** 29 December 1998

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): H4K (KF42 & KDD)

Int Cl (Ed.6): H04Q (3/00)

Other: ONLINE : WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	WO 95/29564 A1	BT (page 3 line 22 to page 4 line 21)	1 and 13
X	US 5526415	FUJITSU (column 2 line 60 to column 3 line 40)	1 and 13
X	US 5511113	FUJITSU (column 4 line 47 to column 5 line 3)	1 and 13

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

The Patent Office

INVESTOR IN PEOPLE

Your ref:	P/61210	**Examiner:**	Ken Long
Application No:	GB 9814418.1	**Tel:**	01633 814778
Applicant:	GPT Limited	**Date of report:**	31 December 1998
Latest date for reply:	3 July 2000	Page 1/1	

Patents Act 1977
Combined Search and Examination Report under Sections 17 & 18(3)

1. Claims 1 and 13 are not clear in that it is not clear that the intelligent network includes rather than provides the service creation environment function. In this connection it is submitted that the use of the word "arranged" in the third line suggests that the function must be an arrangement (eg of software). This objection could be met in both claims by inserting the word "including" before the word "a" in the second line and deleting "in which the SCEF is" from the third line.

agreed

2. Claims 1 and 13 do not appear to be fully supported by the description. In particular, if as would appear from the sentence starting in the penultimate line of page 1, the present invention is intended to provide a unified process both logic and data, then both both claims should apparently require the provision of both service logic and data structures. It would thus seem that the words "and data structures" should apparently be inserted after the word "logic" in the third line of claim 1 with consequential deletion of claim 13 and revision of claim 7.

* This sentence does not state invention solves this problem

NO sentence refers to unified process for logic and (other) unified process for data.

3. The statements of invention starting at lines 6 and 23 of page 2 should be correspondingly revised.

4. Although your invention is not set out clearly, it seems that it might not be new or that it might be obvious in view of what is disclosed in the following documents:

WO 95/29564 A1	BT (page 3 line 22 to page 4 line 21)
US 5526415	FUJITSU (column 2 line 60 to column 3 line 40)
US 5511113	FUJITSU (column 4 line 47 to column 5 line 3)

5. You should consider these documents carefully when amending your specification.

Further search

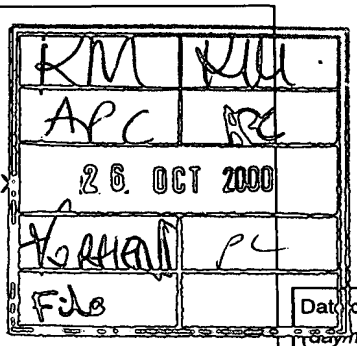
6. A further search may be necessary after you have amended the specification.

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

HOSTE, C.
Marconi Intellectual Property
Waterhouse Lane
CHELMSFORD ESSEX CM1 2QX
GRANDE BRETAGNE



PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing *(day/month/year)*	24.10.2000
Applicant's or agent's file reference P/61210/GPTU51	**IMPORTANT NOTIFICATION**

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB99/02129	02/07/1999	03/07/1998

Applicant
MARCONI COMMUNICATIONS LIMITED et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/	Authorized officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Finnie, A Tel.+49 89 2399-8251

Form PCT/IPEA/416 (July 1992)

TELECOMMUNICATIONS NETWORK

The current invention relates to Telecommunications Networks and in particular to the provision of Intelligent Network and non-Intelligent Network Services.

ITU Recommendations (Q.1221; Q.1222; Q.1223; Q.1224; Q.1225; Q.1228) define a number of Intelligent Network functions and functional relationships. Current intelligent network (IN) architecture uses the service switching point (SSP) to converge IN and non-IN call and connection control. For exchange to exchange signalling, the call control uses ISDN user part (ISUP) and, in the UK, also national user part (NUP) as defined in standards BTNR 167 and ITU-T Q.761-764. From the view point of the SSP, the IN standards define: management of the interaction of IN and non-IN services in the SSP; a service creation environment for IN services; a defined intelligent network application protocol (INAP) for signalling between the service control function (SCF) and the service switching function (SSF); an abstract internal entity definition of SSF and call control function (CCF) functionality within the SSP; and an originating and terminating state machine defining the relationship between call and connection control and IN service logic control realised through the use of the INAP interface defined between the SCF and the SSP. However the exact relationship between SSF and CCF is not defined in the standards.

WO-A-97 36430 assigned to British Telecommunications plc, describes a conventional intelligent network in which IN services are created in a service creation environment whereas non-IN services are not created in the service creation environment.

In intelligent networks service logic and data templates for supporting new services are created in the service creation environment function (SCEF). Current IN architecture definitions provide no single unified process in the SCEF for the definition of IN and

non-IN service logic and service data inter-acting in a coherent manner.

By using the present invention it is possible to provide a more efficient and precise method of defining and deploying IN and non-IN services.

The present invention provides a telecommunications system comprising an intelligent network (IN) for providing IN and non-IN services and comprising a service creation environment function (SCEF), characterised in that the SCEF is arranged to provide service logic for the IN for supporting both IN and non-IN services.

In a preferred embodiment of the invention the telecommunications system comprises a service control function (SCF), a service switching function (SSF) and a call control function (CCF) in which the IN and non-IN service logic is distributed between the SCF, SSF and CCF.

In a further preferred embodiment of the invention the telecommunications system comprises a service control function (SCF) and a service switching point (SSP), the SSP comprising a call control function (CCF) and a service switching function (SSF) in which the IN and non-IN service logic is located in the SCF and in which the SSP is arranged to pass some or all protocol input messages received by the SSP to the SCF and some or all signalling messages originating in the SCF to the CCF for output.

The present invention also provides a telecommunications system comprising an intelligent network (IN) for providing IN and non-IN services and comprising a service

creation environment function (SCEF) characterised in that the SCEF is arranged to provide data structures for the IN for supporting both IN and non-IN services.

Embodiments of the invention will now be described by way of example with reference to the figures in which:

Figure 1 shows in diagrammatic form the elements of a telecommunications system including an intelligent network according to the prior art;

Figure 2 shows in block diagram form a typical network of the prior art implementing an intelligent network;

Figure 3 shows in diagrammatic form an arrangement pertaining to a telecommunications system including an intelligent network according to the present invention.

In a conventional network as shown in Figure 1 the SCEF creates service logic for deployment by the service management function (SMF). Figure 1 depicts the Intelligent Network functions and relationships as defined in the current standards. Note that there is no direct relationship shown between:

the SCF and CCF (although there is one through the SSF);

the SMF and CCF (although there is one through the SSF); or

the SDF and the SSF or CCF.

Intelligent Network Capability Set-2 (IN CS-2) is the second standardised stage of the Intelligent Network (IN) as an architectural concept for the creation and provision of

CLAIMS

1. A telecommunications system comprising an intelligent network (IN) for providing IN and non-IN services, and comprising a service creation environment function (SCEF), characterised in that the SCEF is arranged to provide service logic for the IN for supporting both IN and non-IN services.

2. The telecommunications system of Claim 1 comprising a service control function (SCF), a service switching function (SSF) and a call control function (CCF), in which the system includes means for distributing the IN and non-IN service between the SCF, SSF and CCF.

3. The telecommunications system of Claim 1 comprising a service control function (SCF), a service switching function (SSF) and a call control function (CCF), in which the SCEF is arranged to provide the IN and non-IN service logic in the SCF, the SSF and the CCF.

4. The telecommunications system of Claim 1 comprising a service control function (SCF) and a service switching point (SSP), the SSP comprising a call control function (CCF) and a service switching function (SSF), in which the SCEF is arranged to provide the IN and non-IN service logic in the SCF, and in which the SSP is arranged to pass some or all protocol input messages received by the SSP to the SCF and some or all signalling messages originating in the SCF to the CCF.

5. The telecommunications system of Claim 4 in which the SCF is arranged to perform some or all of the functions previously performed by the service switching function (SSF) and the call control function (CCF).

6. The telecommunications system of any one of the above claims in which the SCEF is also arranged to provide data structures for both IN and non-IN telecommunications services.

7. The telecommunications system of any one of Claims 2 to 6 in which the SCEF is also arranged to provide data structures in the CCF.

8. The telecommunications system of Claim 1 also comprising a call control function (CCF), in which the SCEF is also arranged to provide data structures in the CCF.

9. The telecommunications system of Claim 1 also comprising a call control function (CCF) arranged to allow loading of data structures in the CCF from the service management function (SMF).

10. The telecommunications system of any one of Claims 7 to 9 in which the data structures comprise data structures for both IN and non-IN telecommunications services.

11. The telecommunications system of any of Claims 7 to 10 also comprising a

11. The telecommunications system of any of Claims 7 to 10 also comprising a service data function (SDF), in which the CCF is arranged to access the SDF directly for service data.

12. The telecommunications system of Claim 4 in which the SCEF is arranged to support the definition of messages, operation and parameters for transfer between the SCF and the CCF.

13. A telecommunications system comprising an intelligent network (IN) for providing IN and non-IN services, and comprising a service creation environment function (SCEF), characterised in that the SCEF is arranged to provide data structures for the IN for supporting both IN and non-IN services.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
P/61210/GPTU51		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB99/02129	02/07/1999	03/07/1998
International Patent Classification (IPC) or national classification and IPC H04Q3/00		
Applicant MARCONI COMMUNICATIONS LIMITED et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 7 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☒ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
25/01/2000	24.10.2000
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Möll, H-P Telephone No. +49 89 2399 8243

Form PCT/IPEA/409 (cover sheet) (January 1994)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/02129

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

4-10	as originally filed			
1,1a,2,3	as received on	11/10/2000	with letter of	09/10/2000

Claims, No.:

1-13	as received on	11/10/2000	with letter of	09/10/2000

Drawings, sheets:

1/3-3/3	as originally filed

2. The amendments have resulted in the cancellation of:

☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

see separate sheet

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-13
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-13
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-13
	No:	Claims	

2. Citations and explanations

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Cited Documents

1. Reference is made to the following document (D1) in this International Preliminary Examination Report:

   D1: WO - A - 97 36430 (02.10.1997)

Re Item I

Basis of the report (re 4. Additional Observations)

1. Page 12 includes at the bottom the first line of dependent **Claim 11**. As **Claim 11** is further fully shown on page 13, lines 1-3, the last line of page 12 should have been removed to avoid ambiguity.

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. The present international application relates to Service Creation Environment Functions (SCEF) in an Intelligent Network (IN) and includes two independent Claims directed towards a "telecommunications system comprising an intelligent network for providing IN and non-IN services" (**Claims 1 and 13**).

2. The nearest prior art document D1 also discloses an Intelligent Network System including Service Creation Environment Functions (SCEF). The SCEF as disclosed in D1 is arranged to create either *service logic* and *data* or merely *service logic* for IN-based services to be downloaded to the executive environment, such as a SCP (incl. SCF functions) or a SSP (incl. SSF/CCF functions). D1 thus shows the well-known implementation of prior art IN systems, in which the SCEF provides only service information for IN-based services.

3. The present application deals with the *technical problem* of unifying the process of service creation for IN and non-IN services.

4. The present application solves the above-mentioned *technical problem* by

expanding the functionality of the SCEF, such that the SCEF is able to provide service logic for the IN for supporting both IN and non-IN services according to independent **Claim 1** as well as to provide data structures for the IN for supporting both IN and non-IN services according to independent **Claim 13**.

5. Although D1 discloses creating and downloading service logic and data from the SCEF to execution environment including SSF/CCF (in a SSP) and not only SCF (in a SCP), this document does not **disclose** or **suggest** to expand the SCEF with non-IN service creation and provisioning functionalities.

6. Independent **Claims 1 and 13** thus meet the requirements of Article 33(2) and (3) PCT regarding **novelty** and **inventive step**.

7. As a consequence, **Claims 2-12**, as being directly or indirectly dependent on **Claim 1** also meet the requirements of Article 33(2) and (3) PCT regarding **novelty** and **inventive step**.

Re Item VIII

Certain observations on the international application

1. Dependent **Claim 2** does not meet the requirements regarding **clarity** following from Article 6 PCT, as the term "**logic**" is obviously missing in line 3 of said **Claim 2** in order to unambiguously define that "IN and non-IN service logic is distributed ..." (see also **Claim 1** which introduces the term "service logic" for reference).

2. Dependent **Claim 5** does not meet the requirements regarding **clarity** following from Article 6 PCT for the following reasons:

   The term "previously" used in **Claim 5** is a relative term and has no well-recognised meaning. When reading the subject-matter of **Claim 5** it can only be guessed to what previous situation the respective feature refers. If the applicant tried to define that the SCF is arranged to perform functions being defined for execution by the SSF and CCF in the respective ITU Recommendations, then this should have been **clearly** and **unambiguously** specified in **Claim 5**.

15

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
P/61210/GPTU51		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB99/02129	02/07/1999	03/07/1998
International Patent Classification (IPC) or national classification and IPC H04Q3/00		
Applicant MARCONI COMMUNICATIONS LIMITED et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

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   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

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3. This report contains indications relating to the following items:

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   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☒ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
25/01/2000	24.10.2000
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Möll, H-P Telephone No. +49 89 2399 8243

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/02129

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

4-10	as originally filed			
1,1a,2,3	as received on	11/10/2000	with letter of	09/10/2000

Claims, No.:

1-13	as received on	11/10/2000	with letter of	09/10/2000

Drawings, sheets:

1/3-3/3	as originally filed

2. The amendments have resulted in the cancellation of:

☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

see separate sheet

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-13
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-13
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-13
	No:	Claims	

2. Citations and explanations

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Cited Documents

1. Reference is made to the following document (**D1**) in this International Preliminary Examination Report:

   D1: WO - A - 97 36430 (02.10.1997)

Re Item I

Basis of the report (re 4. Additional Observations)

1. Page 12 includes at the bottom the first line of dependent **Claim 11**. As **Claim 11** is further fully shown on page 13, lines 1-3, the last line of page 12 should have been removed to avoid ambiguity.

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. The present international application relates to Service Creation Environment Functions (SCEF) in an Intelligent Network (IN) and includes two independent Claims directed towards a "telecommunications system comprising an intelligent network for providing IN and non-IN services" (**Claims 1 and 13**).

2. The nearest prior art document **D1** also discloses an Intelligent Network System including Service Creation Environment Functions (SCEF). The SCEF as disclosed in **D1** is arranged to create either *service logic* and *data* or merely *service logic* for IN-based services to be downloaded to the executive environment, such as a SCP (incl. SCF functions) or a SSP (incl. SSF/CCF functions). **D1** thus shows the well-known implementation of prior art IN systems, in which the SCEF provides **only** service information for **IN-based services**.

3. The present application deals with the *technical problem* of unifying the process of service creation for IN and non-IN services.

4. The present application solves the above-mentioned *technical problem* by

expanding the functionality of the SCEF, such that the SCEF is able to provide **service logic** for the IN for supporting **both IN and non-IN services** according to independent **Claim 1** as well as to provide **data structures** for the IN for supporting **both IN and non-IN services** according to independent **Claim 13**.

5. Although **D1** discloses creating and downloading service logic and data from the SCEF to execution environment including SSF/CCF (in a SSP) and not only SCF (in a SCP), this document does not **disclose** or **suggest** to expand the SCEF with **non-IN service** creation and provisioning functionalities.

6. Independent **Claims 1 and 13** thus meet the requirements of Article 33(2) and (3) PCT regarding **novelty** and **inventive step**.

7. As a consequence, **Claims 2-12**, as being directly or indirectly dependent on **Claim 1** also meet the requirements of Article 33(2) and (3) PCT regarding **novelty** and **inventive step**.

Re Item VIII
Certain observations on the international application

1. Dependent **Claim 2** does not meet the requirements regarding **clarity** following from Article 6 PCT, as the term "**logic**" is obviously missing in line 3 of said **Claim 2** in order to unambiguously define that "IN and non-IN **service logic** is distributed ..." (see also **Claim 1** which introduces the term "service logic" for reference).

2. Dependent **Claim 5** does not meet the requirements regarding **clarity** following from Article 6 PCT for the following reasons:

   The term "previously" used in **Claim 5** is a relative term and has no well-recognised meaning. When reading the subject-matter of **Claim 5** it can only be guessed to what previous situation the respective feature refers. If the applicant tried to define that the SCF is arranged to perform functions being defined for execution by the SSF and CCF in the respective ITU Recommendations, then this should have been **clearly** and **unambiguously** specified in **Claim 5**.

TELECOMMUNICATIONS NETWORK

The current invention relates to Telecommunications Networks and in particular to the provision of Intelligent Network and non-Intelligent Network Services.

ITU Recommendations (Q.1221; Q.1222; Q.1223; Q.1224; Q.1225; Q.1228) define a number of Intelligent Network functions and functional relationships. Current intelligent network (IN) architecture uses the service switching point (SSP) to converge IN and non-IN call and connection control. For exchange to exchange signalling, the call control uses ISDN user part (ISUP) and, in the UK, also national user part (NUP) as defined in standards BTNR 167 and ITU-T Q.761-764. From the view point of the SSP, the IN standards define: management of the interaction of IN and non-IN services in the SSP; a service creation environment for IN services; a defined intelligent network application protocol (INAP) for signalling between the service control function (SCF) and the service switching function (SSF); an abstract internal entity definition of SSF and call control function (CCF) functionality within the SSP; and an originating and terminating state machine defining the relationship between call and connection control and IN service logic control realised through the use of the INAP interface defined between the SCF and the SSP. However the exact relationship between SSF and CCF is not defined in the standards.

In intelligent networks service logic and data templates for supporting new services are created in the service creation environment function (SCEF). Current IN architecture definitions provide no single unified process in the SCEF for the definition of IN and

non-IN service logic and service data inter-acting in a coherent manner.

By using the present invention it is possible to provide a more efficient and precise method of defining and deploying IN and non-IN services.

The present invention provides a telecommunications system comprising an intelligent network (IN) for providing IN and non-IN services and comprising a service creation environment function (SCEF) arranged to provide service logic for the IN for supporting both IN and non-IN services.

In a preferred embodiment of the invention the telecommunications system comprises a service control function (SCF), a service switching function (SSF) and a call control function (CCF) in which the IN and non-IN service logic is distributed between the SCF, SSF and CCF.

In a further preferred embodiment of the invention the telecommunications system comprises a service control function (SCF) and a service switching point (SSP), the SSP comprising a call control function (CCF) and a service switching function (SSF) in which the IN and non-IN service logic is located in the SCF and in which the SSP is arranged to pass some or all protocol input messages received by the SSP to the SCF and some or all signalling messages originating in the SCF to the CCF for output.

The present invention also provides a telecommunications system comprising an intelligent network (IN) for providing IN and non-IN services and comprising a service

creation environment function (SCEF) arranged to provide data structures for the IN for supporting both IN and non-IN services.

Embodiments of the invention will now be described by way of example with reference to the figures in which:

Figure 1 shows in diagrammatic form the elements of a telecommunications system including an intelligent network according to the prior art;

Figure 2 shows in block diagram form a typical network of the prior art implementing an intelligent network;

Figure 3 shows in diagrammatic form an arrangement pertaining to a telecommunications system including an intelligent network according to the present invention.

In a conventional network as shown in Figure 1 the SCEF creates service logic for deployment by the service management function (SMF). Figure 1 depicts the Intelligent Network functions and relationships as defined in the current standards. Note that there is no direct relationship shown between:

the SCF and CCF (although there is one through the SSF);

the SMF and CCF (although there is one through the SSF); or

the SDF and the SSF or CCF.

Intelligent Network Capability Set-2 (IN CS-2) is the second standardised stage of the Intelligent Network (IN) as an architectural concept for the creation and provision of

CLAIMS

1. A telecommunications system comprising an intelligent network (IN) for providing IN and non-IN services and comprising a service creation environment function (SCEF) arranged to provide service logic for the IN for supporting both IN and non-IN services.

2. The telecommunications system of Claim 1 comprising a service control function (SCF), a service switching function (SSF) and a call control function (CCF) in which the IN and non-IN service logic is distributed between the SCF, SSF and CCF.

3. The telecommunications system of Claim 1 comprising a service control function (SCF), a service switching function (SSF) and a call control function (CCF) in which the SCEF is arranged to provide the IN and non-IN service logic in the SCF, the SSF and the CCF.

4. The telecommunications system of Claim 1 comprising a service control function (SCF) and a service switching point (SSP), the SSP comprising a call control function (CCF) and a service switching function (SSF) in which the SCEF is arranged to provide the IN and non-IN service logic in the SCF and in which the SSP is arranged to pass some or all protocol input messages received by the SSP to the SCF and some or all signalling messages originating in the SCF to the CCF.

5. The telecommunications system of Claim 4 in which the SCF is arranged to perform some or all of the functions previously performed by the service switching function (SSF) and the call control function (CCF).

6. The telecommunications system of any one of the above claims in which the SCEF is also arranged to provide data structures for both IN and non-IN telecommunications services.

7. The telecommunications system of any one of Claims 2 to 6 in which the SCEF is also arranged to provide data structures in the CCF.

8. The telecommunications system of Claim 1 also comprising a call control function (CCF) in which the SCEF is also arranged to provide data structures in the CCF.

9. The telecommunications system of Claim 1 also comprising a call control function (CCF) arranged to allow loading of data structures in the CCF from the service management function (SMF).

10. The telecommunications system of any one of Claims 7 to 9 in which the data structures comprise data structures for both IN and non-IN telecommunications services.

11. The telecommunications system of any of Claims 7 to 10 also comprising a

service data function (SDF) in which the CCF is arranged to access the SDF directly for service data.

12. The telecommunications system of Claim 4 in which the SCEF is arranged to support the definition of messages, operation and parameters for transfer between the SCF and the CCF.

13. A telecommunications system comprising an intelligent network (IN) for providing IN and non-IN services and comprising a service creation environment function (SCEF) arranged to provide data structures for the IN for supporting both IN and non-IN services.

EPA/EPO/OEB
D-80298 München
+49 89 2399-0
TX 523 656 epmu d
FAX +49 89 2399-4465

Correspondence with the EPO on PCT Chapter II demands

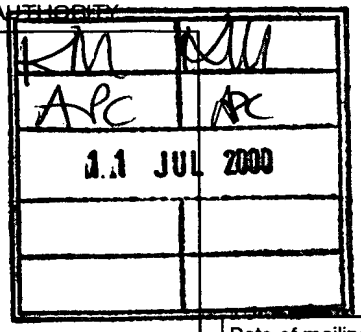
In order to ensure that your PCT Chapter II demand is dealt with as promptly as possible you are requested to use the enclosed self-adhesive labels with any correspondence relating to the demand sent to the Munich Office.

One of these labels should be affixed to a prominent place in the upper part of the letter or form etc. which you are filing.

PATENT COOPERATION TREATY

From the:
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
HOSTE, C.
Marconi Intellectual Property
Waterhouse Lane
CHELMSFORD ESSEX CM1 2QX
GRANDE BRETAGNE



PCT

WRITTEN OPINION

(PCT Rule 66)

Date of mailing *(day/month/year)*	07.07.2000
Applicant's or agent's file reference P/61210/GPTU51	**REPLY DUE** **within 3 month(s)** from the above date of mailing

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB99/02129	02/07/1999	03/07/1998

International Patent Classification (IPC) or both national classification and IPC
H04Q3/00

Applicant
MARCONI COMMUNICATIONS LIMITED et al.

1. This written opinion is the **first** drawn up by this International Preliminary Examining Authority.

2. This opinion contains indications relating to the following items:

I	☒	Basis of the opinion
II	☐	Priority
III	☐	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV	☐	Lack of unity of invention
V	☒	Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI	☐	Certain document cited
VII	☒	Certain defects in the international application
VIII	☒	Certain observations on the international application

3. The applicant is hereby **invited to reply** to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also: For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 03/11/2000.

Name and mailing address of the international preliminary examining authority:
European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized officer / Examiner
Möll, H-P

Formalities officer (incl. extension of time limits)
Finnie, A
Telephone No. +49 89 2399 8251

I. Basis of the opinion

1. This opinion has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed".*):

Description, pages:

1-10 as originally filed

Claims, No.:

1-13 as originally filed

Drawings, sheets:

1/3-3/3 as originally filed

2. The amendments have resulted in the cancellation of:

☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	
Inventive step (IS)	Claims	1-13
Industrial applicability (IA)	Claims	

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Cited Documents

Reference is made to the following document (**D1**) in this Written Opinion:

D1: WO - A - 97 36430 (02.10.1997)

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. re **Claim 1**:

1.1 The document **D1** is regarded as being the closest prior art to the subject-matter of **Claim 1**, and shows a "telecommunications system comprising an intelligent network" with the following features defined in **Claim 1** of the present invention:

- s service creation environment function (SCEF) arranged to provide service logic for the IN *(D1, page 1, lines 5-9; page 2, lines 10-18; page 4, lines 9-22; page 6, lines 14-37; page 9, line 23 - page 10, line 6).*

1.2 The "telecommunications system" defined in present **Claim 1** appears to differ from the disclosure of document **D1** only in that **D1** does not explicitly show that the SCEF is arranged to provide service logic for the IN for supporting **both IN and non-IN services**.

1.3 Considering the fact, however, that every telecommunications network enhanced with IN functionality of course still provides **non-IN services** (i.e. also the system of D1) and that furthermore according to well-known standards the SCEF is generally adapted to develop and test service logic for **IN services** and the present International Application does not specify the provision of service logic for **non-IN services** by the SCEF with any further technical features, it appears that the above-mentioned feature ("service logic ... for supporting **both IN and non-IN services**") of present **Claim 1** does not add anything of **inventive significance** to the features that are explicitly disclosed in **D1** (see point 1.2) and that therefore the subject-matter of **Claim 1** does not meet the requirements of Article 33(3) PCT.

As it is furthermore implicitly clear that also the telecommunications system of **D1** still provides **non-IN services**, no significant difference between the functions performed by the SCEF as disclosed in **D1** and as defined by **Claim 1** can be identified.

2. re **Claim 13**:

2.1 The subject-matter of independent **Claim 13** differs from **Claim 1** only in that the term "service logic" has been replaced by "data structures" and that therefore the SCEF is now defined in **Claim 13** as being arranged to provide data structures for the IN for supporting both IN and non-IN services.

Document **D1** obviously also discloses the above-mentioned feature on page 7, lines 29-35 (Method A, "... using the SCE, service logic is created with the subscriber data ... embedded within the service logic ...") and in Fig.3.

Independent **Claim 13** does therefore also not meet the requirements of Article 33(3) PCT.

3. Dependent **Claims 2-12**:

3.1 Dependent **Claims 2-12** do not appear to contain any features which, in combination with the Claims to which they are appended, meet the requirements of the PCT in respect of **inventive step** (Article 33(3) PCT), as the additional features introduced by said dependent claims refer only to **minor implementing details** which are disclosed or directly derivable from the cited prior art references or fall within the general knowledge or technical competence of a person skilled in the art.

Claims 2 and 3:	*D1, Fig.3 and page 7, line 29 - page 8, line 11; please note that the "execution environment" shown in D1, Fig.3, could be a SCP, SSP or IP according to D1, page 2, lines 15-18;*
Claim 4:	only concerns **minor implementing details** (see also *D1, Fig.1);*
Claim 5:	only concern **minor implementing details**;
Claims 6-8:	*D1, Fig.3 and page 7, lines 29-35, "Method A";*
Claim 9:	*D1, Fig.3 and page 7, lines 35 - page 8, line 2, "Method B";*

Claim 10: only concerns a **minor implementing detail**;
Claim 11: only concerns **minor implementing details** (see also ***D1, Fig.1)***;
Claim 12: only concerns a **minor implementing detail** ***(see also D1, Fig.3)***.

Re Item VII

Certain defects in the international application

1. The independent Claims are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the closest prior art document **D1** being placed in a preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in a characterising part (Rule 6.3(b)(ii) PCT).

2. If any amended independent claims are filed, the opening part of the description should be brought into agreement with the wording thereof (Rule 5.1 (a) (iii) PCT).

3. Contrary to the requirements of Rule 5.1.(a) (ii) PCT, the relevant background art disclosed in the document **D1** noted above is not mentioned in the description, nor is this document identified therein.

4. The attention of the applicant is finally drawn to the fact that the application may not be amended in such a way that it contains subject-matter which extends beyond the content of the application as filed, Article 34(2)(b) PCT. Amendments should be filed by way of replacement pages in the manner stipulated by Rule 66.8(a) PCT. In particular, fair copies of the amendments should be filed preferably in triplicate.

   Moreover, the applicant's attention is drawn to the fact that, as a consequence of Rule 66.8(a) PCT the examiner is not permitted to carry out any amendments under the PCT procedure, however minor these may be.

Re Item VIII

Certain observations on the international application

1. Dependent **Claims 2, 3, 4, 8 and 11** do not meet the requirements regarding **clarity** following from Article 6 PCT for the following reasons:

1.1 The expression "in which" included in the subject-matter of said **Claims 2, 3, 4, 8 and 11** creates ambiguity as it is not clear to which subject this expression refers. In **Claim 2** for example, it could be understood that the "service logic is distributed between the SCF, SSF and CCF in the call control function (CCF)" (which appears not to make sense) or that the "service logic is distributed between the SCF, SSF and CCF in the telecommunications system of Claim 1". As obviously the latter is the case, dependent **Claim 2** should be clarified accordingly.

The same objection equally applies to dependent **Claims 3, 4, 8 and 11** which should also be amended accordingly.

2. Dependent **Claim 2** does furthermore not meet the requirements regarding **clarity** following from Article 6 PCT for the following reasons:

1.1 **Claim 2**, directed towards a "telecommunications system", includes the formulation "... in which the ... service logic **is distributed** between the SCF, SSF and CCF", i.e. **Claim 2** includes an expression that implies an action and its subject-matter thus obviously defines a method step.

Claim 2 does therefore not meet the requirements of Article 6 PCT, since this expression introduces doubt as to the category and exact scope of the Claim.

According to the PCT only two basic kinds of claims exist, viz, claims to a physical entity (**apparatus**) and claims to an activity (**method**) (PCT International Preliminary Examination Guidelines, Chapter III, 3.1). The applicant should note that Claims to a **system** are regarded as claims to an **apparatus** and not as claims to a method or process

In view of the differences in the scope of protection which may be attached to the various categories of claims, the wording of said dependent claims should leave no doubt as to its category (Article 6 PCT and PCT International Preliminary Examination Guidelines, Chapter III, 4.1).

In this respect, functional features used to define physical entities (e.g. "means for ..." or "means arranged in such way as to ...") are interpreted as features of an **apparatus** (**system**) whereas features relating to activities in which the use of a physical entity is implied (e.g. doing something by means of) are regarded as features of a **method** (PCT International Preliminary Examination Guidelines, Chapter III, 3.1).

Thus, in order to meet the requirements of Article 6 PCT with respect to clarity, **Claim 2** should be reformulated and the claimed **system** should be clearly defined in terms of **apparatus** features (i.e. means or other structural features).

3. Dependent **Claim 5** does furthermore not meet the requirements regarding **clarity** following from Article 6 PCT for the following reasons:

The relative term "previously" as used in **Claim 5** has no well-recognised meaning as it is not clear to which previous (?) situation it refers and leaves the reader in doubt as to the meaning of the technical feature to which it refers, thereby rendering the definition of the subject-matter of said Claim **unclear** (Article 6 PCT), in particular as said **Claim 5** furthermore does only vaguely specify that "some or all" (?) functions are now performed by the SCF.

PATENT COOPERATION TREATY

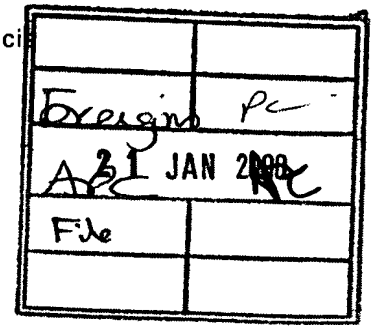
From the INTERNATIONAL BUREAU

PCT

NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:
HOSTE, Colin, Franci
GEC Patent Dept.
Waterhouse Lane
Chelmsford
Essex CM1 2QX
ROYAUME-UNI



Date of mailing (day/month/year) 13 January 2000 (13.01.00)	
Applicant's or agent's file reference P/61210/GPTU51	**IMPORTANT NOTICE**

International application No.	**International filing date** (day/month/year)	**Priority date** (day/month/year)
PCT/GB99/02129	02 July 1999 (02.07.99)	03 July 1998 (03.07.98)

Applicant
MARCONI COMMUNICATIONS LIMITED et al

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:
   AU,CN,EP,IL,JP,KP,KR,US

   In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:
   AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CU,CZ,DE,DK,EA,EE,ES,FI,GD,GE,GH,GM,HR,HU,
   ID,IN,IS,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MD,MG,MK,MN,MW,MX,NO,NZ,OA,PL,PT,RO,RU,SD,
   SE,SG,SI,SK,SL,TJ,TM,TR,TT,UA,UG,UZ,VN,YU,ZA,ZW
   The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on
   13 January 2000 (13.01.00) under No. WO 00/02399

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, **a demand for international preliminary examination** must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the **national phase**, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer
J. Zahra

Telephone No. (41-22) 338.83.38

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

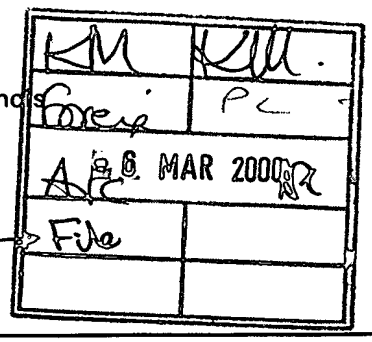
PCT

INFORMATION CONCERNING ELECTED OFFICES NOTIFIED OF THEIR ELECTION

(PCT Rule 61.3)

To:

HOSTE, Colin, Francis
GEC Patent Dept.
Waterhouse Lane
Chelmsford
Essex CM1 2QX
ROYAUME-UNI



Date of mailing (day/month/year) 25 February 2000 (25.02.00)	
Applicant's or agent's file reference P/61210/GPTU51	**IMPORTANT INFORMATION**

International application No.	**International filing date** (day/month/year)	**Priority date** (day/month/year)
PCT/GB99/02129	02 July 1999 (02.07.99)	03 July 1998 (03.07.98)

Applicant
MARCONI COMMUNICATIONS LIMITED et al

1. The applicant is hereby informed that the International Bureau has, according to Article 31(7), notified each of the following Offices of its election:

   AP :GH,GM,KE,LS,MW,SD,SL,SZ,UG,ZW
   EP :AT,BE,CH,CY,DE,DK,ES,FI,FR,GB,GR,IE,IT,LU,MC,NL,PT,SE
   National :AU,BG,BR,CA,CN,CZ,DE,IL,JP,KP,KR,MN,NO,NZ,PL,RO,RU,SE,SK,US

2. The following Offices have waived the requirement for the notification of their election; the notification will be sent to them by the International Bureau only upon their request:

   EA :AM,AZ,BY,KG,KZ,MD,RU,TJ,TM
   OA :BF,BJ,CF,CG,CI,CM,GA,GN,GW,ML,MR,NE,SN,TD,TG
   National :AE,AL,AM,AT,AZ,BA,BB,BY,CH,CU,DK,EE,ES,FI,GD,GE,GH,GM,HR,HU,ID,
   IN,IS,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MD,MG,MK,MW,MX,PT,SD,SG,SI,SL,TJ,TM,
   TR,TT,UA,UG,UZ,VN,YU,ZA,ZW

3. The applicant is reminded that he must enter the "national phase" **before the expiration of 30 months from the priority date** before each of the Offices listed above. This must be done by paying the national fee(s) and furnishing , if prescribed, a translation of the international application (Article 39(1)(a)), as well as, where applicable, by furnishing a translation of any annexes of the international preliminary examination report (Article 36(3)(b) and Rule 74.1).

   Some offices have fixed time limits expiring later than the above-mentioned time limit. For detailed information about the applicable time limits and the acts to be performed upon entry into the national phase before a particular Office, see Volume II of the PCT Applicant's Guide.

   The entry into the European regional phase is postponed **until 31 months from the priority date** for all States designated for the purposes of obtaining a European patent.

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PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION CONCERNING SUBMISSION OR TRANSMITTAL OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

HOSTE, Colin, Francis
GEC Patent Department
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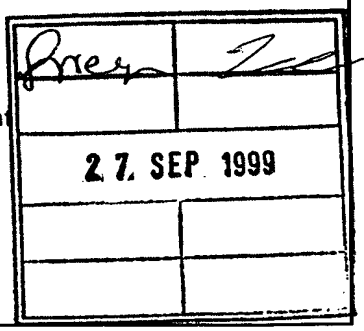

Date of mailing (day/month/year)	
22 September 1999 (22.09.99)	
Applicant's or agent's file reference P/61210/GPTU51	**IMPORTANT NOTIFICATION**
International application No. PCT/GB99/02129	International filing date (day/month/year) 02 July 1999 (02.07.99)
International publication date (day/month/year) Not yet published	Priority date (day/month/year) 03 July 1998 (03.07.98)
Applicant MARCONI COMMUNICATIONS LIMITED et al	

1. The applicant is hereby notified of the date of receipt (except where the letters "NR" appear in the right-hand column) by the International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwise indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).

2. This updates and replaces any previously issued notification concerning submission or transmittal of priority documents.

3. An **asterisk**(*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

4. The **letters "NR"** appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

Priority date	Priority application No.	Country or regional Office or PCT receiving Office	Date of receipt of priority document
03 July 1998 (03.07.98)	9814418.1	GB	13 Sept 1999 (13.09.99)

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer

F. Gateau

Telephone No. (41-22) 338.83.38

PATENT COOPERATION TREATY

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NOTIFICATION OF RECEIPT OF RECORD COPY

(PCT Rule 24.2(a))

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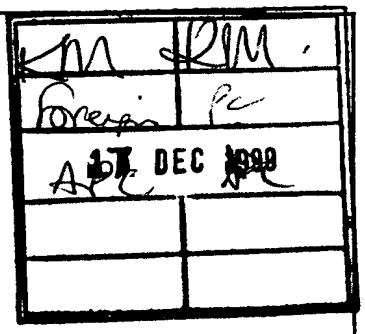

Date of mailing (day/month/year)	IMPORTANT NOTIFICATION
06 December 1999 (06.12.99)	
Applicant's or agent's file reference	**International application No.**
P/61210/GPTU51	PCT/GB99/02129

The applicant is hereby notified that the International Bureau has received the record copy of the international application as detailed below.

Name(s) of the applicant(s) and State(s) for which they are applicants:

MARCONI COMMUNICATIONS LIMITED (for all designated States except US)
PEARSON, Dennis et al (for US)

International filing date	:	02 July 1999 (02.07.99)
Priority date(s) claimed	:	03 July 1998 (03.07.98)
Date of receipt of the record copy by the International Bureau	:	27 July 1999 (27.07.99)
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ATTENTION

The applicant should carefully check the data appearing in this Notification. In case of any discrepancy between these data and the indications in the international application, the applicant should immediately inform the International Bureau.

In addition, the applicant's attention is drawn to the information contained in the Annex, relating to:

- [X] time limits for entry into the national phase
- [ ] confirmation of precautionary designations
- [ ] requirements regarding priority documents

A copy of this Notification is being sent to the receiving Office and to the International Searching Authority.

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34, chemin des Colombettes
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Facsimile No. (41-22) 740.14.35

Authorized officer:

F. Gateau

Telephone No. (41-22) 338.83.38

INFORMATION ON TIME LIMITS FOR ENTERING THE NATIONAL PHASE

The applicant is reminded that the "national phase" must be entered before each of the designated Offices indicated in the Notification of Receipt of Record Copy (Form PCT/IB/301) by paying national fees and furnishing translations, as prescribed by the applicable national laws.

The time limit for performing these procedural acts is **20 MONTHS** from the priority date or, for those designated States which the applicant elects in a demand for international preliminary examination or in a later election, **30 MONTHS** from the priority date, provided that the election is made before the expiration of 19 months from the priority date. Some designated (or elected) Offices have fixed time limits which expire even later than 20 or 30 months from the priority date. In other Offices an extension of time or grace period, in some cases upon payment of an additional fee, is available.

In addition to these procedural acts, the applicant may also have to comply with other special requirements applicable in certain Offices. **It is the applicant's responsibility** to ensure that the necessary steps to enter the national phase are taken in a timely fashion. Most designated Offices do not issue reminders to applicants in connection with the entry into the national phase.

For detailed information about the procedural acts to be performed to enter the national phase before each designated Office, the applicable time limits and possible extensions of time or grace periods, and any other requirements, see the relevant Chapters of Volume II of the PCT Applicant's Guide. Information about the requirements for filing a demand for international preliminary examination is set out in Chapter IX of Volume I of the PCT Applicant's Guide.

GR and ES became bound by PCT Chapter II on 7 September 1996 and 6 September 1997, respectively, and may, therefore, be elected in a demand or a later election filed on or after 7 September 1996 and 6 September 1997, respectively, regardless of the filing date of the international application. (See second paragraph above.)

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

CONFIRMATION OF PRECAUTIONARY DESIGNATIONS

This notification lists only specific designations made under Rule 4.9(a) in the request. It is important to check that these designations are correct. Errors in designations can be corrected where precautionary designations have been made under Rule 4.9(b). The applicant is hereby reminded that any precautionary designations may be confirmed according to Rule 4.9(c) before the expiration of 15 months from the priority date. If it is not confirmed, it will automatically be regarded as withdrawn by the applicant. There will be no reminder and no invitation. Confirmation of a designation consists of the filing of a notice specifying the designated State concerned (with an indication of the kind of protection or treatment desired) and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.

REQUIREMENTS REGARDING PRIORITY DOCUMENTS

For applicants who have not yet complied with the requirements regarding priority documents, the following is recalled.

Where the priority of an earlier national, regional or international application is claimed, the applicant must submit a copy of the said earlier application, certified by the authority with which it was filed ("the priority document") to the receiving Office (which will transmit it to the International Bureau) or directly to the International Bureau, before the expiration of 16 months from the priority date, provided that any such priority document may still be submitted to the International Bureau before that date of international publication of the international application, in which case that document will be considered to have been received by the International Bureau on the last day of the 16-month time limit (Rule 17.1(a)).

Where the priority document is issued by the receiving Office, the applicant may, instead of submitting the priority document, request the receiving Office to prepare and transmit the priority document to the International Bureau. Such request must be made before the expiration of the 16-month time limit and may be subjected by the receiving Office to the payment of a fee (Rule 17.1(b)).

If the priority document concerned is not submitted to the International Bureau or if the request to the receiving Office to prepare and transmit the priority document has not been made (and the corresponding fee, if any, paid) within the applicable time limit indicated under the preceding paragraphs, any designated State may disregard the priority claim, provided that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity to furnish the priority document within a time limit which is reasonable under the circumstances.

Where several priorities are claimed, the priority date to be considered for the purposes of computing the 16-month time limit is the filing date of the earliest application whose priority is claimed.

M.H

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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(71) Applicant *(for all designated States except US)*: MARCONI COMMUNICATIONS LIMITED [GB/GB]; New Century Park, P.O. Box 53, Coventry CV3 1HJ (GB).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: PEARSON, Dennis [GB/GB]; 69 Bridleway, Colehill, Wimborne, Dorset BH21 2UP (GB). SNAPE, Thomas [GB/GB]; 14 St. Leonards Avenue, Blandford, Dorset DT11 7NZ (GB).

(74) Agent: HOSTE, Colin, Francis; GEC Patent Dept., Waterhouse Lane, Chelmsford, Essex CM1 2QX (GB).

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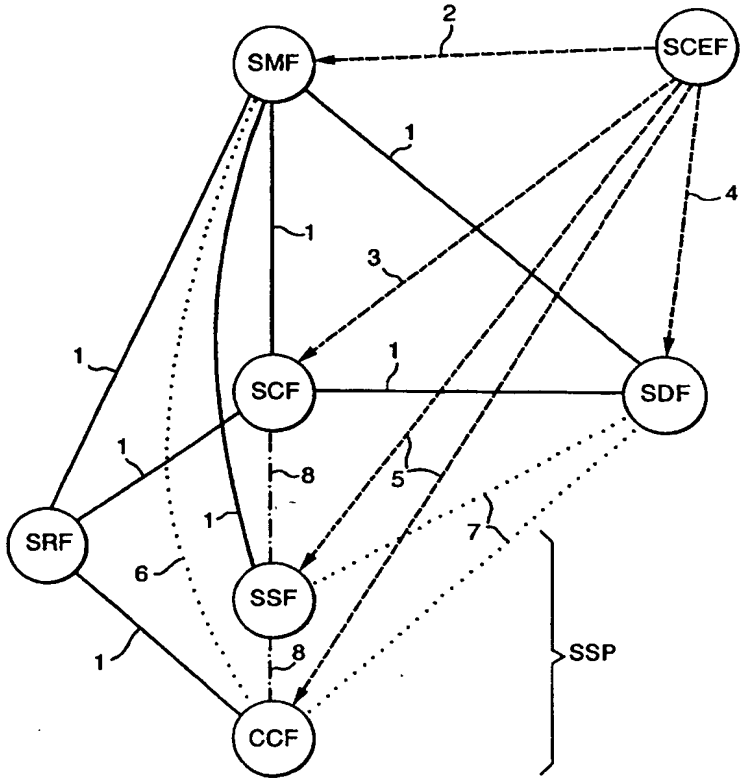
(54) Title: TELECOMMUNICATIONS NETWORK

(57) Abstract

A telecommunications system comprising an intelligent network (IN) for providing IN and non–IN services and a service creation environment function (SCEF) in which the SCEF is arranged to provide service logic and service data templates for supporting both IN and non–IN services. The service logic provided by the SCEF may either be distributed between the SCF, the SSF and the CCF or located in the SCF with the SSF arranged to pass protocol input messages to the SCF and signalling messages from the SCF to the CCF.



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TELECOMMUNICATIONS NETWORK

The current invention relates to Telecommunications Networks and in particular to the provision of Intelligent Network and non-Intelligent Network Services.

ITU Recommendations (Q.1221; Q.1222; Q.1223; Q.1224; Q.1225; Q.1228) define a number of Intelligent Network functions and functional relationships. Current intelligent network (IN) architecture uses the service switching point (SSP) to converge IN and non-IN call and connection control. For exchange to exchange signalling, the call control uses ISDN user part (ISUP) and, in the UK, also national user part (NUP) as defined in standards BTNR 167 and ITU-T Q.761-764. From the view point of the SSP, the IN standards define: management of the interaction of IN and non-IN services in the SSP; a service creation environment for IN services; a defined intelligent network application protocol (INAP) for signalling between the service control function (SCF) and the service switching function (SSF); an abstract internal entity definition of SSF and call control function (CCF) functionality within the SSP; and an originating and terminating state machine defining the relationship between call and connection control and IN service logic control realised through the use of the INAP interface defined between the SCF and the SSP. However the exact relationship between SSF and CCF is not defined in the standards.

In intelligent networks service logic and data templates for supporting new services are created in the service creation environment function (SCEF). Current IN architecture definitions provide no single unified process in the SCEF for the definition of IN and

non-IN service logic and service data inter-acting in a coherent manner.

By using the present invention it is possible to provide a more efficient and precise method of defining and deploying IN and non-IN services.

The present invention provides a telecommunications system comprising an intelligent network (IN) for providing IN and non-IN services and comprising a service creation environment function (SCEF) arranged to provide service logic for the IN for supporting both IN and non-IN services.

In a preferred embodiment of the invention the telecommunications system comprises a service control function (SCF), a service switching function (SSF) and a call control function (CCF) in which the IN and non-IN service logic is distributed between the SCF, SSF and CCF.

In a further preferred embodiment of the invention the telecommunications system comprises a service control function (SCF) and a service switching point (SSP), the SSP comprising a call control function (CCF) and a service switching function (SSF) in which the IN and non-IN service logic is located in the SCF and in which the SSP is arranged to pass some or all protocol input messages received by the SSP to the SCF and some or all signalling messages originating in the SCF to the CCF for output.

The present invention also provides a telecommunications system comprising an intelligent network (IN) for providing IN and non-IN services and comprising a service

creation environment function (SCEF) arranged to provide data structures for the IN for supporting both IN and non-IN services.

Embodiments of the invention will now be described by way of example with reference to the figures in which:

Figure 1 shows in diagrammatic form the elements of a telecommunications system including an intelligent network according to the prior art;

Figure 2 shows in block diagram form a typical network of the prior art implementing an intelligent network;

Figure 3 shows in diagrammatic form an arrangement pertaining to a telecommunications system including an intelligent network according to the present invention.

In a conventional network as shown in Figure 1 the SCEF creates service logic for deployment by the service management function (SMF). Figure 1 depicts the Intelligent Network functions and relationships as defined in the current standards. Note that there is no direct relationship shown between:

the SCF and CCF (although there is one through the SSF);

the SMF and CCF (although there is one through the SSF); or

the SDF and the SSF or CCF.

Intelligent Network Capability Set-2 (IN CS-2) is the second standardised stage of the Intelligent Network (IN) as an architectural concept for the creation and provision of

services, including telecommunication services, service management services and service creation services. Call/service processing for IN CS-2 builds upon the call processing infrastructure of existing digital exchanges. It does so by using a generic model of existing call control functionality to process basic two-party calls, then adding service switching functionality to invoke and manage IN service logic. Once invoked, IN service logic is executed under the control of the service control function (SCF), in conjunction with the service data function (SDF). With this distributed approach to call/service processing, the existing call control function retains ultimate responsibility for the integrity of calls, as well as for the control of call processing resources.

The current definition of IN CS-2 imposes a number of call/service processing conditions as described in the following paragraphs:

(a) Call control and service switching functionality are tightly coupled, and the relationship between SSF and CCF is not standardised in IN CS-2: therefore no open interface exists between them.

(b) A call is either between two or more end users that are external to the network (and addressable via a directory number or combination of directory number and bearer capability), or between one or more end users and the network itself.

(c) A call may be initiated by an end user, or by a SCF within the network on behalf of an end user. To supplement a call, IN service logic may be

invoked either by an end user served by an IN exchange, or by the network on behalf of an end user.

(d) A call may span multiple exchanges. As such, each exchange only controls the portion of the call in that exchange - call processing is functionally separated between exchanges. IN service logic invoked on SSPs in such an inter-exchange call is managed independently by each SSP.

(e) Existing exchanges can be viewed as having two functionally separate sets of call processing logic that coordinate call processing activities to create and maintain a basic two-party call. This functional separation is provided between (i) the originating portion of the call and (ii) the terminating portion of the call. This functional separation should be maintained in an IN exchange to allow IN service logic invoked on the originating portion of the call (i.e. on behalf of the calling party) to be managed independently of IN service logic invoked on the terminating portion of the call (i.e. on behalf of the called party).

(f) It is desirable to allow multiple IN-supported service logic instances to be simultaneously active for a given end user. It is also recognised that non-IN service logic will continue to exist in the network. As such, IN CS-2 mechanisms for providing service feature logic instances should:

- determine which service logic to invoke for a given service

request. This mechanism should select the appropriate IN service logic or non-IN service logic and block the invocation of any other service logic for that particular service request;

- limit simultaneously active IN and non-IN service logic instances;
- ensure that simultaneously active IN service logic instances adhere to the single-ended, single point of control restriction on IN CS-2 service processing, i.e. an SSF never has to inter-act with more than one SCF at any one time.

(g) The distributed approach and added complexity of call/service processing for IN CS-2 requires mechanisms for fault detection and recovery, allowing graceful termination of calls and appropriate treatment for end users.

A typical conventional network implementation of the Intelligent Network (IN) concept is shown in Figure 2, which shows the IN elements interfacing with a Front Office System. The Call Control Function is provided by a number of co-operating CCFs which provide basic call and supplementary service control. This is provided in the originating and terminating local exchanges (Digital Local Exchange (DLE)) and in trunk exchanges (Digital Main Switching Unit (DMSU)). The IN provides limited control of the CCF via the SCF and the SSF using a standard signalling interface such as CS-2. This allows for single-point control over the routing of the connection between the originating and terminating subscribers for services such as Freephone, where translation of the destination number is performed at the SCP. Note that all IN services can be triggered

at any of the local or trunk exchanges in the example shown in the figure.

In a conventional telecommunications network the call handling is provided in the CCF. When a user makes access to the telecommunications network, e.g. by initiating a telephone call, a call control chain is established from the caller via one or more CCFs to the destination. Various stages of the call control chain are set-up according to the standards for NUP, ISUP or access protocol ITU-T Q.931. These protocols define the messages and protocol information elements. Access protocol input messages are derived from the ISUP and Q.931 call control chain. Protocol information elements are defined in ISUP or Q.931 (e.g. calling line identity) or sent from the SCF as appropriate, dependant on the service requested. The call control chain from the CCF to other exchanges is therefore driven by messages defined by the appropriate network standard (NUP/ISUP) or access protocol (ITU-T Q.931).

According to Q.1221 the SCEF allows an intelligent network service to be defined, developed, tested and input to the SMF. To do this the SCEF outputs service logic and service data templates. The service management function, SMF provides service operation control, service provision control, service deployment control, service monitoring and maintenance. The SCF and SSF are responsible for the handling of interactions between IN based SSF/CCF capabilities and non-IN features already provided in the basic network.

Figure 3 shows the various interfaces between the elements of an telecommunications

system including an intelligent network according to the present invention.

In the prior art, interfaces 1 exist between CCF-SRF, SRF-SCF, SRF-SMF, SCF-SMF, SCF-SDF, SMF - SSF and SMF-SDF. In addition, in the prior art, the SCEF has means 2 for the deployment of management forms to the SMF, means 3 for the deployment of service logic and data templates to the SCF and means 4 for the deployment of service data templates to the SDF.

According to the embodiments of the invention described here, new interfaces 5 allow deployment of service logic and service data to the SSF and CCF. Further new interface 6 provide means for data population and management from the SMF to the CCF. Further new interfaces 7 provide direct access from the SSF and CCF to the SDF for service data. Finally the existing interfaces 8 between SCF-SSF and SSF-CCF are enhanced according to a preferred embodiment of the invention described below.

Two embodiments of the invention will now be described by way of example, however the invention is not limited to these embodiments which only represent illustrations of two amongst a multitude of possible arrangements that fall within the scope of the invention. In particular, the distribution of service logic and service data amongst the elements referred to above is not limited to those described in the embodiments. Elements from each embodiment may be combined to form further arrangements according the present invention. In both embodiments the SCEF produces service logic to control the call control chain between exchanges and any functional response to the protocol used to invoke services.

According to a first embodiment of the invention the SCEF is used to provide service logic, both IN and non-IN, distributed between the SCF and SSF/CCF. In order to achieve the above the SCEF is enhanced to allow service logic and associated data structures to be created and loaded into the CCF as well as the SCF and SSF for both IN and non-IN service control. In addition, the CCF is enhanced to allow it to be loaded with service logic and service data, e.g. from the SMF or man-machine interface (MMI), to interact with the SCF via the SSF using messages, operations and parameters defined using the SCEF, and to create a relationship between the CCF and the service data function (SDF). In this instance, the CCF will access the SDF directly for service data.

According to a second embodiment of the invention the SCEF is used to provide service logic, both IN and non-IN, residing in the SCF with only a minimal amount of service logic required in the SSF and CCF. The SSP is arranged to send all or some protocol input messages to the SCF and, in addition, all or some signalling messages originating in the SCF are sent out by the SSF/CCF. Basic control of internal resources is still done by the CCF. The signalling messages originated by the SCF include NUP, ISUP or Q.931 messages and parameters for onward transmission and are enveloped by the SSF with a CS-2 envelope. These functions are supported by the SCEF which is enhanced to allow the definition of messages, operations and parameters for transfer between the SCF and the CCF (relayed by the SSF) for control of both IN and non-IN services. In addition, the SSF is enhanced to allow the transparent passage of messages between the SCF and CCF for both call related and call unrelated activities and a relationship is established between the SSF, the CCF and the SCF. In this instance, the SSF acts as a relay between the SCF and CCF.

The present invention advantageously allows the service developer to specify the way in which IN and non-IN services interact and to load appropriate service logic into the CCF to allow all subscriber service profiles (part of the service data) to be held on the SCF or SDF or distributed as required so as to control the behaviour of the call control chain to provide IN and non-IN services. An example of this control would be to invoke functionality in distant telecommunications exchanges via communication using NUP or ISUP messages (e.g. invoking Ring-Back-When-Free in a second exchange when the desired called party is already using the telephone). The data elements (static and dynamic data which define telecommunications services established for the subscriber) have a relationship defined by the service creation process in the SCEF. The present invention allows the SMF to load the SCF, SSF and CCF with the appropriate service logic and service data to provide the IN non-IN services in a coherent manner and allow the SCF to send the ISUP or NUP protocol information element via the SSF/CCF to the distant exchange and invoke RBWF, if the subscriber has this service.

CLAIMS

1. A telecommunications system comprising an intelligent network (IN) for providing IN and non-IN services and comprising a service creation environment function (SCEF) arranged to provide service logic for the IN for supporting both IN and non-IN services.

2. The telecommunications system of Claim 1 comprising a service control function (SCF), a service switching function (SSF) and a call control function (CCF) in which the IN and non-IN service logic is distributed between the SCF, SSF and CCF.

3. The telecommunications system of Claim 1 comprising a service control function (SCF), a service switching function (SSF) and a call control function (CCF) in which the SCEF is arranged to provide the IN and non-IN service logic in the SCF, the SSF and the CCF.

4. The telecommunications system of Claim 1 comprising a service control function (SCF) and a service switching point (SSP), the SSP comprising a call control function (CCF) and a service switching function (SSF) in which the SCEF is arranged to provide the IN and non-IN service logic in the SCF and in which the SSP is arranged to pass some or all protocol input messages received by the SSP to the SCF and some or all signalling messages originating in the SCF to the CCF.

5. The telecommunications system of Claim 4 in which the SCF is arranged to perform some or all of the functions previously performed by the service switching function (SSF) and the call control function (CCF).

6. The telecommunications system of any one of the above claims in which the SCEF is also arranged to provide data structures for both IN and non-IN telecommunications services.

7. The telecommunications system of any one of Claims 2 to 6 in which the SCEF is also arranged to provide data structures in the CCF.

8. The telecommunications system of Claim 1 also comprising a call control function (CCF) in which the SCEF is also arranged to provide data structures in the CCF.

9. The telecommunications system of Claim 1 also comprising a call control function (CCF) arranged to allow loading of data structures in the CCF from the service management function (SMF).

10. The telecommunications system of any one of Claims 7 to 9 in which the data structures comprise data structures for both IN and non-IN telecommunications services.

11. The telecommunications system of any of Claims 7 to 10 also comprising a

service data function (SDF) in which the CCF is arranged to access the SDF directly for service data.

12. The telecommunications system of Claim 4 in which the SCEF is arranged to support the definition of messages, operation and parameters for transfer between the SCF and the CCF.

13. A telecommunications system comprising an intelligent network (IN) for providing IN and non-IN services and comprising a service creation environment function (SCEF) arranged to provide data structures for the IN for supporting both IN and non-IN services.

Fig.1.

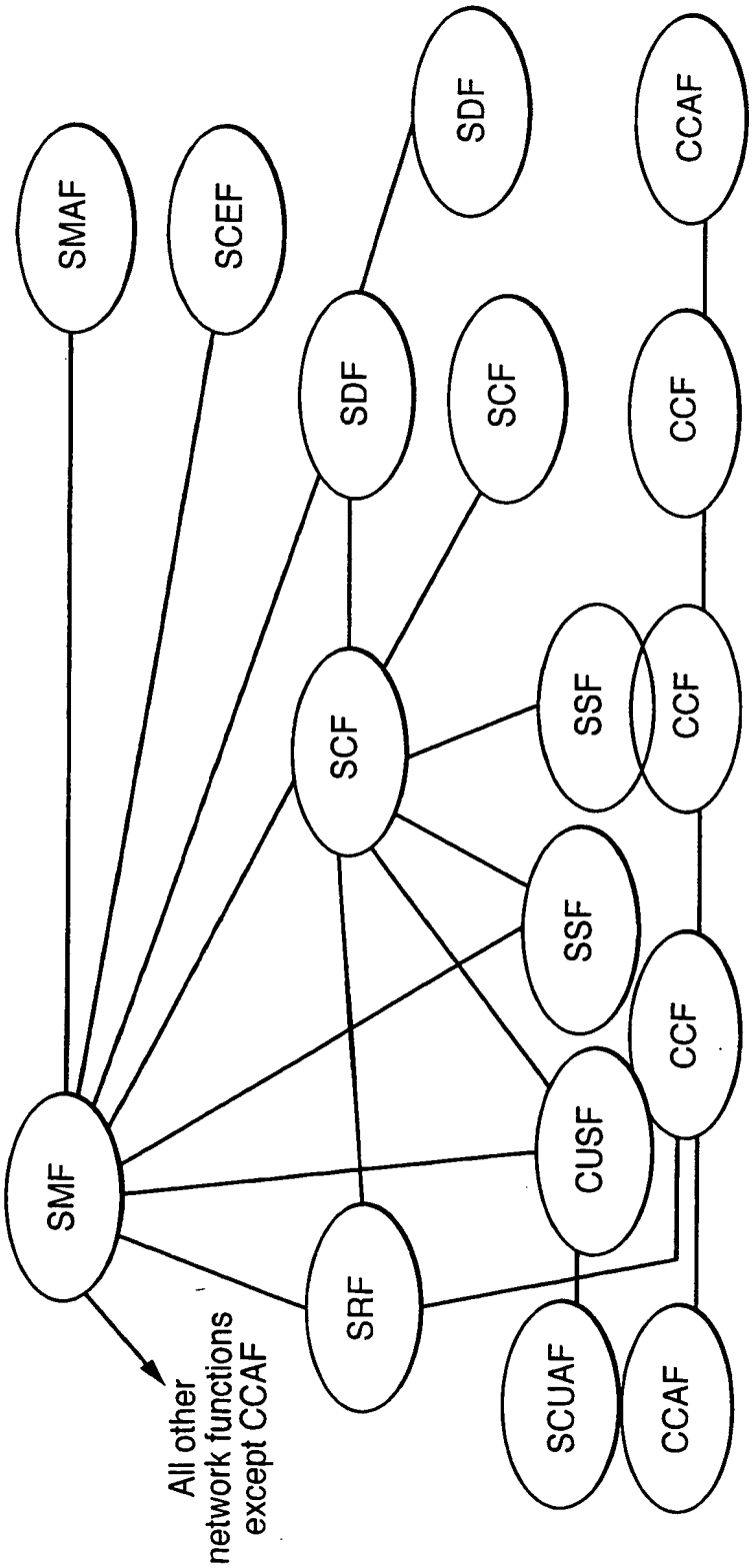

SMAF
SCEF
SDF
CCAF
SDF
SCF
CCF
SCF
SSF
CCF
SSF
CCF
SMF
CUSF
SRF
SCUAF
CCAF
All other network functions except CCAF

Fig.2.

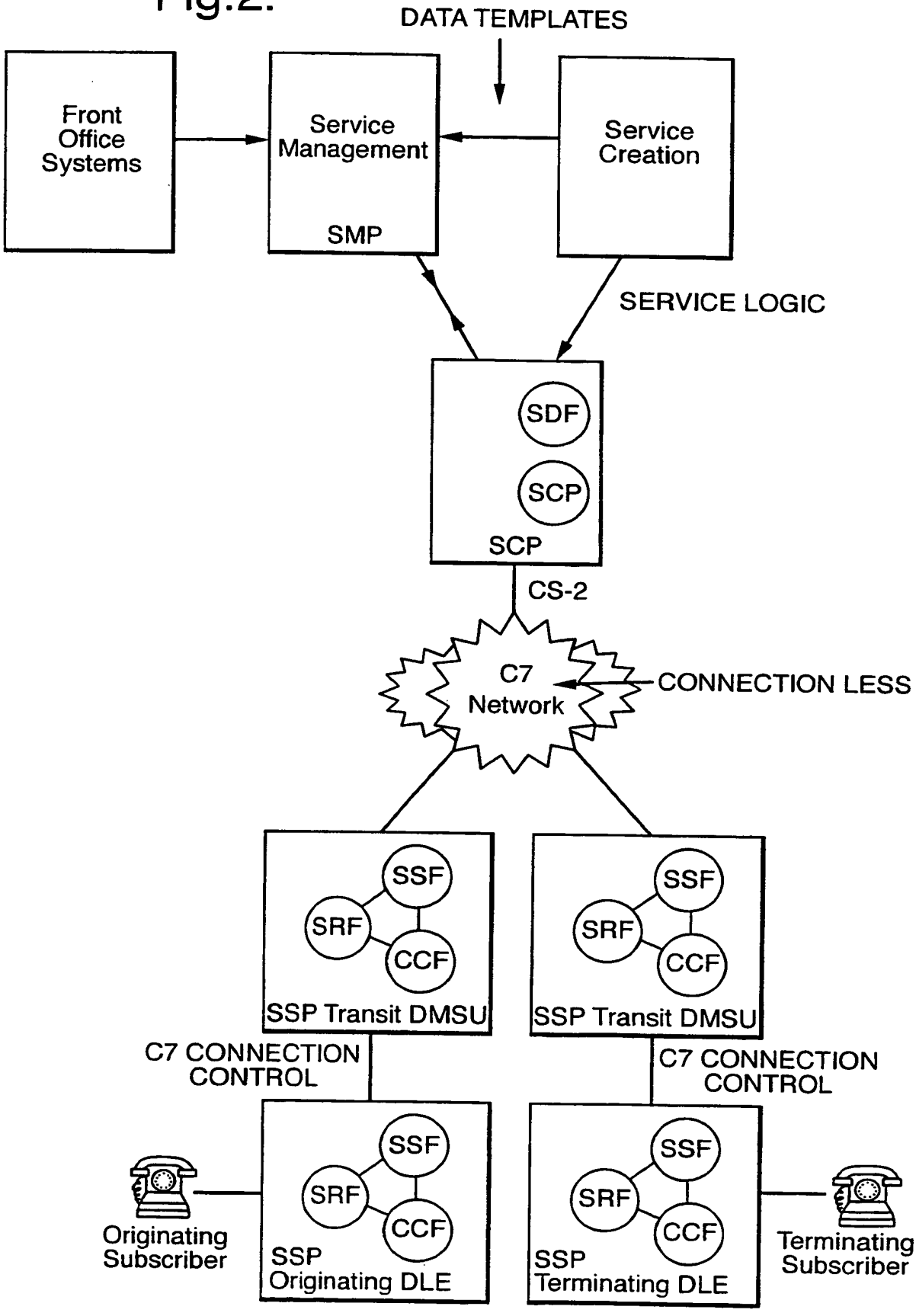
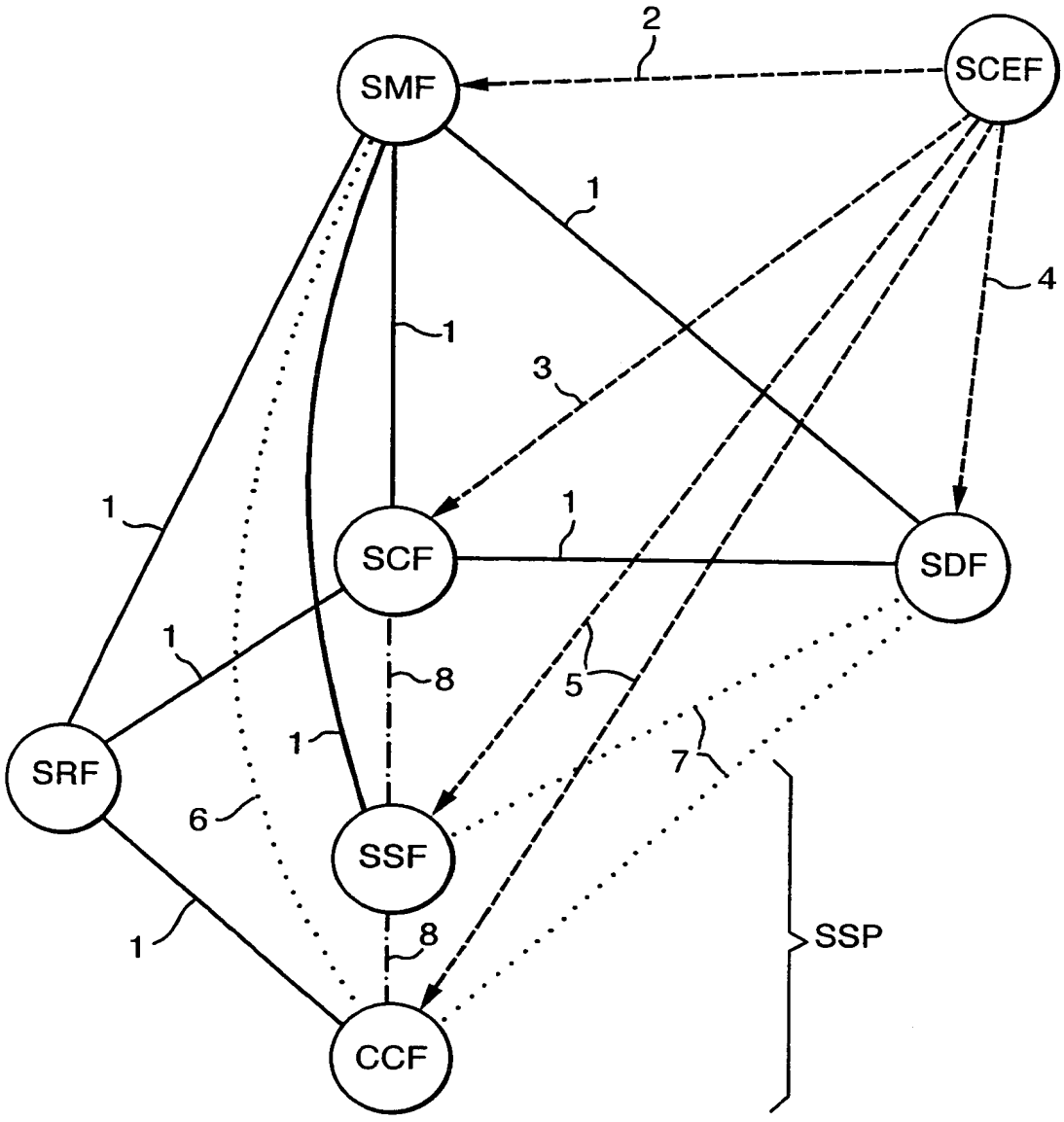

DATA TEMPLATES
Front Office Systems
Service Management
SMP
Service Creation
SERVICE LOGIC
SDF
SCP
SCP
CS-2
C7 Network
CONNECTION LESS
SSF
SRF
CCF
SSP Transit DMSU
SSF
SRF
CCF
SSP Transit DMSU
C7 CONNECTION CONTROL
C7 CONNECTION CONTROL
SSF
SRF
CCF
SSP Originating DLE
SSF
SRF
CCF
SSP Terminating DLE
Originating Subscriber
Terminating Subscriber

Fig.3.



INTERNATIONAL SEARCH REPORT

[redacted] nal Application No
CT/GB 99/02129

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04Q3/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 36430 A (NORTHERN TELECOM LIMITED) 2 October 1997 (1997-10-02) abstract page 1, line 5 - line 9 page 2, line 10 - line 18 page 4, line 9 - line 22 page 6, line 14 - line 37 page 9, line 23 -page 10, line 6 --- -/--	1-3,6,13

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
7 October 1999	14/10/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Larcinese, C

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INTERNATIONAL SEARCH REPORT

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PCT/GB 99/02129

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	RICHARDS P S: "RAPID SERVICE DELIVERY AND CUSTOMIZATION IN A DEVELOPING NETWORK INFRASTRUCTURE" COMPUTER NETWORKS AND ISDN SYSTEMS, May 1993 (1993-05), pages 1031-1039, XP000786027 ISSN: 0169-7552 page 1031, right-hand column, line 16 - line 24 page 1033, right-hand column, line 6 -page 1034, right-hand column, line 30 figure 1 ---	1-13
A	US 5 511 113 A (TASAKI ET AL.) 23 April 1996 (1996-04-23) abstract column 1, line 1 - line 19 column 2, line 61 -column 3, line 3 column 3, line 38 - line 54 ---	1-13
A	EP 0 726 682 A (AT&T CORP.) 14 August 1996 (1996-08-14) abstract column 3, line 38 -column 4, line 16 figure 1 -----	1-13

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		JP 8274874 A	18-10-1996